UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00145

June 18, 2003

Mr. Fred Patron
U.S. Department of Transportation
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Upper Perry (Grande Ronde River) Bridges Replacement Project, Union County, Oregon

Dear Mr. Patron:

Enclosed is the biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of the proposed Upper Perry Bridge Replacement Project in Union County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River spring/summer chinook salmon (*O. tshawytscha*), and Snake River basin steelhead (*O. mykiss*), or destroy or adversely modify designated critical habitats. As required by section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the potential for incidental take associated with these actions.

This document also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR part 600).

If you have any questions regarding this consultation, please contact Tom Loynes of my staff in the Oregon Habitat Branch at 503.231.6892.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Nick Testa, ODOT
Shelly Schmidt, ODOT
Randy Reeve, ODFW
Diana Hwang, USFWS
Jon Adkins, Mason, Bruce, and Girard, Inc.

Endangered Species Act - Section 7 Consultation
Biological Opinion

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Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Upper Perry (Grande Ronde River) Bridges Replacement Project,
Union County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	June 18, 2003
Issued by:	for Michael R Course _____ D. Robert Lohn Regional Administrator
Refer to:	**2003/00145**

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1. ENDANGERED SPECIES ACT

1.1 Background

On February 19, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a biological assessment (BA) and a request from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation for the Upper Perry Bridges Replacement Project proposed by the Oregon Department of Transportation (ODOT). The Upper Perry Bridges Replacement Project will replace the westbound and eastbound bridges on Interstate 84 (I-84) over the Grande Ronde River, with two new, wider structures. The two bridges are 3.5 kilometers (km) west of La Grande in Union County, Oregon. This biological opinion (Opinion) is based on the information presented in the BA, site visits and discussions with the applicant.

The FHWA has determined that both the Snake River (SR) spring/summer-run chinook salmon (*O. tshawytscha*) and the SR steelhead (*O. mykiss*) are reasonably likely to occur within the project area of the Upper Perry Bridges Replacement Project. The SR spring/summer-run chinook salmon were listed as threatened under the ESA on April 22, 1992 (57 FR 14653), critical habitat was designated on December 28, 1993 (58 FR 68543), and protective regulations were issued under section 4(d) of the ESA on April 22, 1992 (57 FR 14653). Designated critical habitat includes all river reaches accessible to listed chinook in all river reaches in the Columbia River from a straight line connecting the west end of the Clatsop Jetty and the west end of the Peacock Jetty, and including all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and the Snake Rivers, and all Snake River reaches from the confluence of the Columbia River upstream to the Hells Canyon dam. Excluded from critical habitat are those reaches upstream of impassible natural waterfalls, and Dworshak and Hells Canyon dams.

SR steelhead were listed as threatened under the ESA on August 18, 1997 (62 FR 43937), and protective regulations were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

This Opinion is based on the information presented in the BA and developed through correspondence to obtain additional information and clarity. The objective of this Opinion is to determine whether the actions to demolish and remove the existing structures and construct new structures are likely to jeopardize the continued existence of the SR spring/summer-run chinook salmon, and the SR steelhead, or destroy or adversely modify their critical habitat. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402. The FHWA, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), determined that the proposed actions are likely to adversely affect SR spring/summer-run chinook salmon and SR steelhead.

1.2 Proposed Actions

The proposed actions analyzed in this Opinion are described in the Upper Perry Bridges Replacement Project BA.

Measures will be taken by ODOT to avoid and minimize environmental impacts at the project site. The BA outlines restrictions (Upper Perry Bridges Project, pp. 29-37) that apply to the project, providing direction as to what would constitute an acceptable design. Some of the restrictions address environmental concerns related to the project sites. These restrictions address concerns such as: (1) Restriction of the waterway; (2) stormwater; (3) bridge removal; and (4) temporary ground disturbance. The BA also contains conservation measures including: (1) Erosion and sediment control; (2) stormwater treatment; (3) in-water work restrictions; and (4) material and vehicle staging restrictions; to reduce the potential aquatic impacts, all work will be isolated from the wetted channel.

During the past three years, the existing I-84 bridges over the Grande Ronde River have shown elevated signs of stress, primarily in the cracking deck girders. This structural deterioration is most closely attributed to heavy traffic volumes and the heavier commerce loads that have occurred since the 1960s, when the structures were first built. Temporary repairs have been undertaken in an attempt to maintain a minimum level of service for the trucking industry. However, continued deterioration has resulted in the need to weight-restrict these structures to approximately 43,350 kilograms (kg), the annual heavy haul limit. The proposed project will begin in 2003, and is expected to be completed in 2005.

The Upper Perry Bridges Replacement Project will replace two existing bridges over the Grande Ronde River along I-84 (MP 256.17). Eastbound and westbound traffic on I-84 currently crosses the Grande Ronde River at this location via two separate side-by-side structures, each having two bents (support structures) within the active river channel. The existing eastbound and westbound bridges will be removed and replaced with a single structure that will have wider roadway lanes. The new bridge will be a two-span structure, 132.6 meters (m) in length, and approximately 27.5 m in overall width. The project will also include widening of bridge approaches, construction of bridge impact panels, and widening of the eastbound Perry off-ramp. The construction season will last from approximately March 1 to November 15. Cold winter air temperatures will likely prevent most construction activities from taking place during the winter months.

Bridge replacement will be staged to allow continuous passage of traffic along I-84. Stage 1 will involve removal of the existing eastbound structure, construction of a new southern (eastbound lanes) structure, and construction of a retaining wall. Eastbound traffic will be diverted to the westbound structure during Stage 1.

Stage 2 of bridge construction will involve removal of the westbound structure and construction of the new northern (westbound lanes) structure. Westbound traffic will be diverted to the eastbound structure during Stage 2.

Project conservation measures have been incorporated into the proposed project design to minimize and avoid impacts to chinook salmon and steelhead trout and their habitats (section 7.0 of the BA). These measures address erosion control, containment and handling of hazardous materials, and disturbance of riparian vegetation. All in-water work on this project would be completed during the preferred in-water work window for the Grande Ronde River (July 1 to October 15) (ODFW 2000).

Demolition of Existing Bridges

The existing bridges will be removed in stages. The eastbound structure will be removed in 2004, and the westbound structure in 2005. Beginning in 2003, falsework will be erected under the existing structures to provide both structural support and a work and debris containment platform throughout the entire process of bridge removal and construction. It is expected that the falsework will be supported on existing bridge footings, thereby eliminating the need for driving pilings into the streambed. However, a few temporary pilings may be required to provide the necessary support for bridge removal and new bridge construction. These pilings, if needed, could cause short-term effects in the form of turbidity when they are installed.

The existing bridge deck will be removed in sections. The deck will be cut longitudinally along the beam lines into sections that can be carried out along the temporary work platform. End spans will likely be removed first, followed by the middle spans. The falsework and temporary work platform will provide the containment necessary to prevent debris and materials from falling into the Grande Ronde River.

All existing bridge columns will be cut off a minimum of 0.6 m below the streambed elevation. The exception will be cases where conflict exists between a proposed footing or column and an existing structure. For instance, the existing column adjacent to the location of the proposed eastbound Bent 2 (mid-span bent) will be cut off at the level of the existing footing (approximately 884.4 m elevation) to allow construction of the new bent. Existing spread footings and remaining portions of columns will remain in place. Those below the ordinary high water (OHW) elevation of approximately 886.1 m will be covered with native streambed materials obtained from the toe trenches excavated on-site.

Access to the area under the west end of the bridge is required for removal of existing piers and footings. This will require construction of a temporary access road along the northwest corner of the existing bridge, in the area lying between I-84 and the adjacent Union Pacific Railroad. The road will be approximately 50 m long and will not extend below the ordinary high water (OHW). The ground on which the access road will be constructed consists primarily of fill materials associated with the highway and railroad. An area of approximately 150 square meters (m^2) would be cleared of vegetation for construction of the access road. Approximately 12 ponderosa pine (Pinus ponderosa) trees between 50 millimeters (mm) and 200 mm diameter at breast height (dbh) will be removed for construction of temporary access roads. Following completion of work under the bridge, the access road will be removed and all disturbed ground will be restored to a stable, vegetated condition. Removed trees will be replaced at a 2 to 1 ratio. Tree planting and habitat enhancement are discussed in greater detail in section 10 of the BA. An erosion and

sediment control plan (ESCP) will be developed for the project, and will include plans and specifications for restoration of disturbed areas.

Removal of the existing in-water support structures will occur following removal of the bridge spans. Thus, the in-water columns and footings supporting the eastbound structure will be removed in 2004, whereas, the column and footing supporting the westbound structure will occur in 2005. Removal of the in-water support structures should require no more than two weeks during the 2004 and 2005 in-water work periods.

Isolation of in-water work areas will be required to excavate and cut off existing columns within the wetted channel below the OHW. A cofferdam will be constructed from sandbags or sheet pile driven to the bedrock surface to isolate the in-water work area. If sheet pile is used instead of sandbags, it would likely be supported from inside the cofferdam. Water within the cofferdam will be pumped into settling ponds on the terrace to allow sediment to settle out and flow through existing vegetation before release back into the Grande Ronde River. Fish salvage operations will be conducted to remove all fish from work isolation areas via electrofishing if an ODOT or ODFW biologist determines that listed fish may be present within the cofferdam.

Construction of New Bridge

Bent 1 will be the end bent at the west end of the new bridge structure. The bent will be a pile-supported structure founded on approximately 12 driven piles. Bent 2 will be the mid-span bent and will be partially within the OHW. Bent 2 will be supported on two 6.1-m^2 concrete spread footings that will be keyed into the underlying basalt layer. No piles will be required to support the footings. The southernmost footing at Bent 2 will be almost entirely below the OHW, while the northernmost footing will be entirely above the OHW. An area of approximately 650 m^2 will be excavated to allow construction of the spread footings for Bent 2. Approximately 225 m^2 of the excavation area is below the OHW. The volume of material to be removed from the OHW will be approximately 600 cubic meters (m^3), approximately 85% of which will consist of sandy gravel, with the remaining 15% consisting of fractured basalt. The new footings will be countersunk and the excavated rock will be stockpiled for later use as backfill material.

Construction of the new Bent 2 footings will require approximately eight weeks during the 2003 and 2004 construction seasons. This work will occur before removal of existing footings and columns and the work area will be isolated. All work conducted below the OHW will occur during the ODFW-defined in-water work period (July 1 to October 15) (ODFW 2000). Bent 3 will support the eastern end of the new structure and will be supported on a single 2 by 28 m spread footing. No riprap will be used around the footings.

Isolation of in-water work areas may be required to construct the footings at Bent 2 depending on water levels. The southern footing and column will be partially within the wetted channel below the OHW. The need for work area isolation will be determined by river level at the time of construction. Footing construction will occur in late summer when river levels are lowest but, isolation may be necessary. Work area isolation will include the use of a sandbag dam or sheet

pile. Sheet pile would be driven to the bedrock surface to form a cofferdam and would likely be supported from inside the cofferdam. Fish salvage operations will be conducted to remove all fish from work isolation areas if an ODOT or ODFW biologist determines that listed fish may be present within the cofferdam. Upstream and downstream fish passage will be maintained at all times in the Grande Ronde River. The work isolation area would be dewatered and fish removal will be completed in accordance with NOAA Fisheries' guidelines to prevent entrainment of juvenile salmonids.

Staging of construction equipment and materials will occur at the west end of the bridge below and adjacent to the bridge, and at the east end of the structure near the westbound Perry on-ramp and the eastbound Perry off-ramp. The area under the west end of the bridge is approximately 12 m from the OHW. Specific conservation measures will be developed to prevent contamination of the Grande Ronde River. The area at the east end of the bridge is more than 45 m from the OHW. A third possible staging area is at the Upper Perry Interchange on-ramp to westbound I-84 and would provide a storage area for equipment not actively being used. The vehicles needed at the Bent 2 construction area could include a track-mounted excavator, pile driver, small crane, and a concrete pumper.

Riprap Revetment

ODOT proposes to construct a riprap revetment along the north embankment at the west end of the new bridge. ODOT's Geotechnical investigations have determined that erodible materials exist over the basalt formations along the river's north bank. Therefore, the river could meander toward the north bank by scouring away the embankment, potentially undermining the retaining wall during extreme flood conditions. The revetment is necessary to protect the proposed, mechanically-stabilized earth (MSE) retaining wall along the south side of the eastbound lanes at this location. The sparsely vegetated riverbank at this location consists of smaller riprap and fill materials.

The revetment will extend from west to east along the north bank, a distance of approximately 125 m. The revetment will extend up the bank to an elevation of approximately 889.6 m, corresponding to the 500-year flood event. A toe-trench, constituting the foot of the revetment, will be excavated down to an elevation of approximately 886 m, approximately 1.2 m below the streambed elevation. Therefore, the overall height of the revetment, including the toe-trench, will be approximately 3.6 m. If the bedrock layer is encountered above the proposed toe-trench elevation, no toe-trench will be constructed. In this event, the base of the riprap revetment would only be keyed in to the basalt and would begin at the top of the existing bedrock layer. Construction of the revetment will require approximately 5 to 10 working days to complete because of the need to excavate the toe-trench.

Excavation of the toe-trench will be accomplished with an excavator operating from a bench excavated far enough down the slope to place the excavator within reach of the proposed toe-trench. It is expected that the contractor will stage construction of the revetment. For example, a short section of the toe-trench would be excavated, then the rock would be placed in the trench and along the revetment wall. The excavator could then move along the bank a short

distance and excavate the next section of the toe-trench and place the rock, and so on. Following construction, all disturbed areas will be stabilized, seeded, and mulched.

Isolation of the approximately 500 m^2 of work area encompassing the toe-trench may be necessary if the water level is above the elevation of the toe-trench. However, it is likely that a substantial portion of the work area may be dry during revetment construction. It is expected that a sandbag wall could be constructed to sufficiently isolate the excavation area from flowing water. It is expected that revetment construction would be staged, allowing isolation of multiple smaller areas, rather than isolation along the entire length of the revetment, all at once. Turbid water generated through excavation of the toe-trench and revetment construction will be pumped into settling ponds before release to the river or will be pumped into trucks and hauled offsite for disposal.

Retaining Wall

Additional widening for the roadway will be needed for both the westbound and eastbound lanes to match the width of the new bridge. The construction of a retaining wall will be required. The retaining wall will be a MSE wall constructed along the south side of the highway to the west of the structure. The wall will extend approximately 76 m to the west, along the north bank of the Grande Ronde River. It will be a maximum of 9 m high at the east end and will taper to ground height at its west end. The MSE wall will not extend below the calculated 100-year flood elevation of approximately 888.9 m. Approximately 2000 m^3 of fill will be added behind the MSE wall. Some removal of roadside vegetation will be required. Vegetation in these areas is limited to low-growing shrubs and herbaceous plants. Approximately 16 trees between 50 mm diameter at breast height (dbh) and 150 mm dbh will be removed for construction of the retaining wall and revetment. Construction of the MSE wall will follow construction of the riprap revetment.

Blasting and Rockfall Protection

Blasting of the basalt rock formation at the east end of the bridge will be required to allow construction of the footing at Bent 3. Blasting will also occur at the rock outcropping above Bent 3 and the nearby Perry off-ramp to accommodate the wider off-ramp and bridge and provide a rock fallout area. No blasting will occur below the 100-year flood elevation. Flying rock will be contained with blast mats or similar means to prevent damage to structures and delivery of ejected material to waterways. Contract specifications will limit the strength of the blasting charges to avoid fracturing the basalt layer more than three m below the surface. This will be necessary to maintain the integrity of the rock supporting Bent 3. Blasting activities will occur during the normal construction season (March 1-November 15).

Stormwater Drainage/Impervious Surface

The existing area of impervious surfaces for the east and west ends of the bridge, the Perry off-ramp, and the bridge structure totals 9,682 m^2. Roadway approaches will be widened to approximately 2.4 m to match the width of the new bridge. This will result in 593 m^2 of new impervious surfaces for the west and east ends of the bridge. Widening of the off-ramp by approximately 1.5 m will add 476 m^2 of new impervious surface, and construction of the new

bridge will add 975 m^2 of new impervious surface. A total of 2,044 m^2 of new impervious surfaces will be added to the action area as a result of proposed bridge and roadway widening.

All runoff from the new bridge will be collected by inlets and catch basins at the west end of the bridge. From the catch basins, stormwater runoff will flow through a new 450-mm pipe installed under the roadway. The new pipe will outlet to the northwest corner of the bridge where runoff will be allowed to flow overland or infiltrate through approximately 80 m of vegetated ground before meeting the Grande Ronde River. Runoff from the existing bridges currently is discharged directly over the side of the bridge to the river or riverbanks.

Approximately 76 m of curbing will be added to the south side of I-84 at the western end of the new bridge. This curbing was intended to be part of the design for the Drinking Fountain Grade to Pendleton Project which abuts the Upper Perry Bridges Project, but was omitted by the construction contractor. The addition of the curbing will direct stormwater to the new inlets and eventually to the north side of the highway where runoff will be allowed to infiltrate into the ground.

Bank Stabilization/Enhancement at Oro Dell Quarry

ODOT proposes to conduct bank stabilization activities along a portion of the riverbank at the Oro Dell Quarry site, approximately 4.8 km downstream of the project site at river kilometer (Rkm) 263. The site consists of approximately 300 m of the outer riverbank on a large meander bend. The riverbank at this location largely devoid of riparian vegetation and is actively eroding. ODOT proposes to lay the banks back to a 3 to 1 slope. The site will be seeded and planted with native riparian and upland plant species. Bank stabilization work below the ordinary high water mark will be conducted during the ODFW defined in-water work period of July 1-October 15 (ODFW 2000). The bank stabilization work will be conducted under a separate construction contract. ODOT has awarded a Design-Build contract for replacement of the Quarry Bridges adjacent to the Oro Dell site. The Quarry Bridges project may include other similar improvements at the Oro Dell site, thus all bank stabilization work would be completed under the same contract to avoid having multiple construction contractors on site one time and the two projects would be completed in the same time frame.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information and Critical Habitat

Based on migratory timing, listed salmon or steelhead species may be present in the action area during the proposed bridge replacement projects. The proposed actions will occur within designated critical habitat for SR chinook salmon.

An action area is defined by NOAA Fisheries regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." Direct affects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the river where actions described in this Opinion lead to additional activities or affect ecological functions contributing to habitat degradation.

Essential features of the adult and juvenile habitat for these species in the action area are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) cover/shelter, (6) riparian vegetation, (7) food, and (8) passage. The essential features that these proposed projects may affect are substrate, water quality, riparian vegetation, and food.

Grande Ronde River

SR spring/summer-run chinook salmon migrate through the upper Grande Ronde River within the project vicinity between the months of February and July, with spawning occurring in the upper reaches of the basin. Juveniles migrate downstream during late February through May. The Grande Ronde River within the proposed project area is primarily used by chinook as a migration corridor and possibly as a juvenile rearing area.

Adult SR steelhead migrate through the upper Grande Ronde River within the project vicinity between the months of February and July and spawn in the upper reaches and tributaries. Juveniles migrate downstream during late February through May. Juvenile steelhead may occur in the project area during the in-water work period, but due to high summer water temperatures their presence is not likely.

2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the: (1) Definition of the biological requirements and current status of the listed species; and (2) evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

Furthermore, NOAA Fisheries evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' designated critical habitat. NOAA Fisheries must determine if habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NOAA Fisheries identifies those effects of the action that impair the function of any essential element of critical habitat. NOAA Fisheries then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NOAA Fisheries concludes that the action will destroy or adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' critical habitat analysis considers the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of SR spring/summer-run chinook salmon and SR steelhead.

2.1.2.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed chinook and steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the SR spring/summer-run chinook salmon and SR steelhead for ESA protection, and also considers new available data that is relevant to the determinations.

The relevant biological requirements are those necessary for ESA-listed salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environmental.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful migration and rearing in the project area. The current status of the SR spring/summer-run chinook salmon and SR steelhead, based upon their risk of extinction, has not significantly improved since the species was listed.

2.1.2.2 Environmental Baseline

The current range-wide status of the SR spring/summer-run chinook salmon and SR steelhead is described in Busby *et al.* (1996) and Myers *et al.* (1998). The identified actions will occur within the range of the SR spring/summer-run chinook salmon and SR steelhead. The direct effects will occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activity includes the immediate watersheds where the bridge replacements occur, the proposed enhancement sites, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term.

For the purposes of this Opinion, the action areas are the channel and adjacent riparian area from about 400 meters upstream from the project and enhancement sites, and downstream 400 meters below the project and enhancement sites. Temporary indirect impacts (temperature modification, disruption of primary productivity, water quality, and food resources) and potential direct affects (sediment, pollutant discharge, and hydraulics) to the Grande Ronde River will be caused by the in-water work and general riparian and bank disturbance within the project areas. Fish salvage will have a direct effect during isolation of work areas and fish removal and relocation.

The dominant land use in the Grande Ronde River watershed is rural residential, private agriculture, and forestry. Riparian vegetation throughout the basin is heavily impacted by overgrazing, road building, and timber harvest (Busby *et al.*, 1996). The Grande Ronde River watershed is unique because of its naturally turbid streams and high pH and alkalinity. The watershed is also water-deficient, primarily due to the seasonal pattern of rainfall and the demand for water for irrigation use. Various water quality monitoring within the Grande Ronde River watershed by ODEQ shows degraded water quality regarding temperatures, biological oxygen demand, dissolved oxygen, bacteria, nutrients, and pH levels (ODEQ 1999).

Based on the best available information regarding the current status of the SR spring/summer-run chinook salmon, and SR steelhead, the population status, trends, genetics, and the poor environmental baseline conditions within the action areas, NOAA Fisheries concludes that the biological requirements of the SR spring/summer-run chinook salmon and SR steelhead are not currently being met. Degraded habitat resulting from agricultural practices, forestry practices, road building, and residential construction, indicate many aquatic habitat indicators are not properly functioning within the Grande Ronde River. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of these species.

2.1.3 Analysis of Effects

2.1.3.1 Effects of Proposed Actions

The following proposed actions have the potential to cause the following impacts to SR spring/summer-run chinook salmon and SR steelhead.

Construction Equipment

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). To minimize the potential of pollutants entering the waterway construction equipment, materials and refueling would be staged at least 45 meters from the OHW.

Hardened embankments

Impacts to waterways from installation of hardened embankments include simplification of stream channels, alteration of hydraulic processes, and prevention of natural channel adjustments (Spence *et al*. 1996). Moreover, embankment hardening may shift the erosion point upstream or downstream of the project site, and contribute to stream velocity acceleration. As amplified erosive forces attack different locations and landowners respond with more bank hardening, the river eventually attains a continuous fixed alignment lacking habitat complexity (USACE 1977).

Fish habitats are enhanced by the diversity of ecological conditions at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bed load materials, and reduce flow velocity.

The most desirable method of bank protection is revegetation. However, revegetation alone can seldom stabilize banks steeper than 3:1 (horizontal:vertical) or areas of high velocity (USACE 1977). Although they are biologically less desirable, fixed structures provide the most reliable means of bank stability. The use of structural measures should be a last resort. Combining structural measures such as sloped riprap, vegetation, and large woody debris (LWD) is preferable to a structural solution without vegetation (USACE 1977). Where riprap is necessary it would be buried under native streambank material to facilitate stream continuity and the growth of woody vegetation.

Sedimentation

Potential sedimentation impacts to listed salmonids from the proposed actions include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity level (Sigler *et al.* 1984, Gregory 1988), during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorous fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Scannell 1988). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1998).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to

reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991). Because the potential for turbidity should be localized and brief, the probability of direct mortality is negligible.

Construction-related effects necessary to complete the proposed action will be minimized by implementation of effective erosion and pollution control measures and completing all work within the OHW during the ODFW recommended in-water work period. In addition, all work will be isolated from the wetted channel. No construction or construction equipment will enter the wetted channel, except for installation of coffer dams, as a result of the proposed action.

Water Quality Stormwater Effects

Due to an increase of new impervious surface, the potential exists for an increase in runoff from the proposed new impervious surface at both proposed project sites. However, the proposed stormwater runoff treatment criteria will more than offset any potential adverse effects to water quality as a result of the proposed action. The proposed stormwater treatment criteria would require all stormwater to be routed to the end of the bridges where it would be treated in a manner that would not result in a change in the hydraulic conditions or an increase of pollutants to the Grande Ronde River.

Stream Hydraulics

The placement of fill material below the OHW would typically result in simplification of habitat and increased stream velocities under the structure. However, based on new design technologies allowing greater span lengths in bridges, the new bridges are likely to have fewer bents within the OHW. Fewer bents within the OHW would result in a net decrease of fill within the OHW cross section. Bridge approach fill within the 100 year floodplain can result in a restriction of the floodway causing increased stream velocities during high flows. The increased velocities can facilitate stream degradation for unknown distances downstream. The degradation process begins with increased channel down-cutting and bank erosion. This can result in an increase of fine sediments within the channel substrate as well as a decrease in width to depth ratios. The instream habitat is simplified due to fewer pools and complex cover (Rosgen 1996).

Riparian Vegetation

Woody vegetation that will be cleared at the Upper Perry Bridges Project includes approximately 17 Ponderosa pine (*Pinus ponderosa*) and 11 black cottonwood (*Populus balsamifera ssp. trichocarpa*) trees between 50 mm and 200 mm dbh to be removed for construction of the temporary access road, riprap revetment, and retaining wall. However, during construction, erosion control measures and post-project riparian plantings will reduce erosion during construction and restore woody vegetation. All affected areas will be restored to pre-work conditions. Damaged streambanks will be restored to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation. All exposed soil surfaces, including construction access roads and associated staging areas, will be stabilized with mulch, native herbaceous seeding, and native woody vegetation. Woody vegetation removed during construction wil be replanted at a 2:1 ratio. Areas requiring revegetation will be replanted between October 15 and April 15. The riparian plantings will provide bank stabilization,

shading, and increase the potential for insect production. The bank stabilization area, including the slope work, seeding and plantings, will be monitored for five years to ensure a 70% minimum success rate. The 70% success rate is based on ODOT monitoring results for other projects in Eastern Oregon, as well as information from the Confederated Tribes of the Umatilla from their monitoring results.

Work Area Isolation and Fish Removal

Bridge bent construction and removal may require work area isolation from the flowing water. Fish removal activities would be in accordance with NOAA Fisheries' fish handling guidelines. Any listed fish removed from the isolated work area would experience high stress, with the possibility of up to a 5% delayed mortality rate depending on rescue method. Work area isolation can result in a loss of aquatic invertebrates due to dewatering areas within the wetted channel. In addition, sediment laden water created within isolated work areas could escape, resulting in impacts to the aquatic environment downstream of the project site.

The adverse effects of these activities on SR spring/summer-run chinook salmon and SR steelhead and riparian and aquatic habitats will be avoided or minimized by carrying out the construction methods and approaches described in the BA that meet the design baselines.

2.1.3.2 Effects on Critical Habitat

NOAA Fisheries designates critical habitat based on physical and biological features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for SR spring/summer-run chinook salmon and SR steelhead consists of all waterways below naturally-impassable barriers, including the project areas. The adjacent riparian zone is also included in the designation. This zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter. Effects on critical habitat from the proposed action are included in the effects description above.

2.1.3.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area for the Upper Perry Bridge Replacement Project has been defined as the Grande Ronde River channel and adjacent riparian area for 400 meters upstream and downstream from the construction and enhancement site. Many actions occur within the Grande Ronde watershed, within which the actions areas are found.

Non-Federal activities within the action areas are expected to increase with a projected 34% increase in human population over the next 25 years in Oregon (Oregon Department of Administrative Services 1999). Thus NOAA Fisheries assumes that future private and state

actions will continue within the action areas, but at increasingly higher levels as population density increases. NOAA Fisheries assumes that future permitted projects in the Grande Ronde River watersheds will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

2.1.4 Conclusion

NOAA Fisheries has determined that, when the effects of the FHWA's proposed actions (funding the replacement of the Upper Perry Bridges) are added to the environmental baselines and cumulative effects occurring in the action areas, they are not likely to jeopardize the continued existence of the SR spring/summer-run chinook salmon and SR steelhead, or cause adverse modification or destruction of designated critical habitat. This determination is limited to an analysis of the baseline design guidelines as developed by ODOT. This determination does not apply to any design that the contractor may propose that diverges from those design guidelines.

The conclusion for the baseline design guidelines was based on the following considerations: (1) All in-water work and other construction activities within the OHW will take place according to Oregon guidelines for timing of in-water work to protect fish and wildlife resources; (2) work area isolation, including use of NOAA Fisheries' guidelines for proper fish collecting and handling (NOAA Fisheries 2000), and the conservation measures outlined in the BA will be in place to avoid or minimize adverse affects to water quality; (3) potential flow effects of increased impervious area will be avoided or minimized by water quality treatment and detention before being released into any waterway; (4) trees cleared for construction of the new bridge will be replaced with new riparian plantings; (5) streambanks and riparian areas disturbed by new construction and in the area uncovered by removal of the old bridge will be planted with native woody vegetation; and (6) the proposed action is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to long-term survival and recovery at the population ESU scale.

2.1.5 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion is reasonably certain to result in incidental take of SR spring/summer-run chinook, and/or SR steelhead because of detrimental effects from sediment pulses and increased temperature levels (non-lethal) and the slight possibility of juvenile presence in the vicinity of the project site during in-water work. NOAA Fisheries expects the possibility exists for incidental take of up to 25 juvenile SR spring/summer-run chinook salmon and 25 juvenile SR steelhead during work area isolation and and the associated trapping and hauling of fish. Take resulting from the effects of other project actions covered by this Opinion is largely unquantifiable in the short term, and not expected to be measurable in the long term. The extent of take is limited to the action areas previously identified.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Upper Perry Bridge Replacement Project BA includes as a part of its design, a set of "conservation measures" designed to minimize take of listed species. Specific measures for in-water and bank work, clearing and grubbing, bridge removal, erosion control, hazardous materials, and site-specific conservation and habitat remediation measures are included as part of these terms and conditions by reference.

NOAA Fisheries believes that the following reasonable and prudent measures along with conservation measures described in the BA are necessary and appropriate to minimize the likelihood of take of listed fish resulting from implementation of this Opinion. These reasonable and prudent measures would also minimize adverse effects to designated critical habitat.

The FHWA shall:

1. Minimize the likelihood of incidental take of construction activities by limiting the time and extent of in-water work as necessary to avoid harming vulnerable salmon life stages, including migration and rearing.

2. Minimize the likelihood of incidental take from in-water work by ensuring that work within the wetted channel is isolated from flowing water.

3. Minimize the amount and extent of incidental take from construction activities in or near the creek through development and implementation of effective erosion and pollution control measures throughout the area of disturbance and for the life of the project.

4. Minimize the amount and extent of take from loss of instream habitat and impacts to critical habitat by implementing measures to minimize impacts to riparian and instream habitat, or where impacts are unavoidable, to replace or restore lost riparian and instream functions.

5. Minimize the amount and extent of take from stormwater impacts and altered stream hydraulics by implementing measures to treat water and limit fill within the 100 year floodplain.

6. Ensure effectiveness of implementation of the reasonable and prudent measures, all fish handling, erosion control measures, and plantings for site restoration through monitoring and evaluation both during and following construction.

2.2.3 Terms and Conditions

1. To implement reasonable and prudent measure #1 (in-water timing and minimizing the extent of in-water work), the FHWA shall ensure that:

    a. Construction impacts will be confined to the minimum area necessary to complete the project.

i. Survey and mark the ordinary high water mark at the project site before commencement of work to delineate the permitted work area.
ii. All work within the active channel that could potentially contribute sediment or toxicants to downstream fish-bearing systems will be completed within the ODFW-approved in-water work period.[1]

b. Extensions of the in-water work period, including those for work outside the wetted perimeter of the stream but below the ordinary high water mark, must be approved in advance by biologists from NOAA Fisheries.

c. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

2. To implement reasonable and prudent measure #2 (isolation of in-water work area and proper fish handling methods), the FHWA shall ensure that:

a. During in-water work (work within the ordinary high water mark) if the project involves either significant channel disturbance or use of equipment within the wetted channel, the work area is well isolated from the active flowing stream within a cofferdam (made out of sand bags, sheet pilings, inflatable bags, *etc.*) or similar structure, to minimize the potential for sediment entrainment. Furthermore, no ground or substrate disturbing action will occur within the ordinary high water mark 90 meters upstream of potential spawning habitat as measured at the thalweg without isolation of the work area from flowing waters. After the coffer dam is in place, any fish trapped in the isolation pool will be removed by a permitted ODOT and/or ODFW biologist before de-watering, using NOAA Fisheries guidelines.

b. Any water intake structure authorized under this Opinion must have a fish screen installed, operated and maintained in accordance to NOAA Fisheries fish screen criteria. (http://www.nwr.noaa.gov/1hydrop/pumpcrit1.htm)
i. Water pumped from the work isolation area will be discharged into an upland area providing over-ground flow before returning to the creek. Discharge will occur so that it does not cause erosion.
ii. Discharges into potential fish spawning areas or areas with submerged vegetation are prohibited.

c. <u>Fish Salvage, Trap, and Haul</u>
i. Before, and intermittently during pumping of the work area isolation pools, attempts will be made to salvage and release fish from the work isolation area as is prudent to minimize risk of injury. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

(1) Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
(2) ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.
(3) Seined fish must be released as near as possible to capture sites.
(4) The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.
(5) The applicant must obtain any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities.
(6) The applicant must allow NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.
(7) A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

ii. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NOAA Fisheries 2000):
(1) Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.
(2) Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a log.
(3) A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader's experience must be documented and available for confirmation. This documentation may be in the form of a logbook. The training must occur before an inexperienced crew begins any electrofishing, and it must also be conducted in waters that do not contain listed fish.
(4) Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

(5) Direct current (DC) must be used at all times.

(6) Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed five milliseconds. Pulse rate should start at 30Hz and work carefully upwards. *In general*, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

(7) The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

(8) The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

(9) Crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

(10) Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

(11) The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

d. Fish Passage. Full passage shall be provided for both adult and juvenile forms of salmonid species throughout the construction period.

3. To implement reasonable and prudent measure #3 (erosion and pollution control), the FHWA will ensure that:

a. The Contractor will develop and implement a site-specific spill prevention, containment, and control plan (SPCCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this SPCCP. The plan must contain

the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

i. Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.

ii. Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.

iii. A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

iv. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

b. Construction discharge water. All discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:

i. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed four feet per second.

iii. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 90 meters upstream of spawning areas or areas with marine submerged vegetation.

c. Treated wood. Projects using treated wood[2] for any structure that may contact flowing water or that will be placed over water are not authorized, except for pilings installed following NOAA Fisheries' guidelines.[3] Projects that require removal of treated wood will use the following precautions:

i. Treated wood debris. Care must be taken to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, it must be removed it immediately.

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[2] "Treated wood" means lumber, pilings, and other wood products preserved with alkaline copper quaternary (ACQ), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), copper naphthenate, chromated copper arsenate (CCA), pentachlorophenol, or creosote.

[3] Letter from Steve Morris, National Marine Fisheries Service, to W.B. Paynter, Portland District, U.S. Army Corps of Engineers (December 9, 1998) (transmitting a document titled *Position Document for the Use of Treated Wood in Areas within Oregon Occupied by Endangered Species Act Proposed and Listed Anadromous Fish Species, National Marine Fisheries Service, December 1998*).

ii. Removal of treated pilings. If treated wood pilings will be removed, the following conditions apply:
    (1) Pilings must be dislodged with a vibratory hammer.
    (2) Once loose, the pilings must be placed onto the construction barge or other appropriate dry storage location, and not left in the water or piled onto the stream bank.
    (3) If pilings break during removal, the stump must be removed by breaking or cutting three feet below the sediment surface, then covered with a substrate appropriate for the site.
    (4) All treated wood removed during a project must be disposed of at a facility approved for hazardous materials of this classification.

d. Material removed during excavation will only be placed in locations where it cannot enter streams, wetlands, or other water bodies.

e. During excavation, native streambed materials will be stockpiled above the bankfull elevation for later use.

f. The following erosion and pollution control materials are onsite:
    i. A supply of erosion control materials (*e.g.*, silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.
    ii. An oil-absorbing, floating boom is available on-site during all phases of construction. The boom must be of sufficient length to span the wetted channel.
    iii. All temporary erosion controls (*e.g.*, straw bales, silt fences) are in-place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in-place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

g. All exposed or disturbed areas will be stabilized to prevent erosion.
    i. Areas of bare soil within 45 meters of waterways, wetlands or other sensitive areas will be stabilized by native seeding[4], mulching, and placement of erosion control blankets and mats, if applicable, but within 14 days of exposure.
    ii. All other areas will be stabilized quickly as reasonable, but within 14 days of exposure.
    iii. Seeding outside of the growing season will not be considered adequate nor permanent stabilization.

h. All erosion control devices will be inspected during construction to ensure that they are working adequately.
    i. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites.

[4]By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

ii. If inspection shows that the erosion controls are ineffective, work crews will be mobilized immediately, during working and off-hours, to make repairs, install replacements, or install additional controls as necessary.

iii. Erosion control measures will be judged ineffective when turbidity plumes are evident in waters occupied by listed salmonids during any part of the year.

i. If soil erosion and sediment resulting from construction activities is not effectively controlled, ODOT will limit the amount of disturbed area to that which can be adequately controlled.

j. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground 12 centimeters. Catch basins will be maintained so that no more than 15 centimeters of sediment depth accumulates within traps or sumps.

k. Sediment-laden water created by construction activity will be filtered before it leaves the right-of-way or enters a stream or other water body. Silt fences or other detention methods will be installed as close as reasonable to culvert outlets to reduce the amount of sediment entering aquatic systems.

l. Any hazardous materials spill will be reported to NOAA Fisheries.

i. In the event of a hazardous materials or petrochemical spill, immediate action shall be taken to recovery toxic materials from further impacting aquatic or riparian resources.

ii. In the event of a hazardous materials or petrochemical spill, a detailed description of the quantity, type, source, reason for the spill, and actions taken to recover materials will be documented. The documentation should include photographs.

m. The work bridges will have containment measures in place that minimizes any potential of petrochemicals or hazardous materials from entering the river.

i. The decking of the work bridge shall be constructed to self-contain petrochemicals and hazardous materials.

ii. The work bridges and the containment structure will be maintained to preserve containment integrity throughout the term of the project.

n. <u>Refueling and hazardous materials</u>

i. All staging and refueling shall occur at least 45 meters from the ordinary high-water mark, except as stated below.

ii. No auxiliary fuel tanks will be stored within 45 meters of the ordinary high-water mark.

iii. No hazardous materials will be stored on the work bridge.

4. To implement reasonable and prudent measure #4 (in-stream and riparian habitat loss), the FHWA will ensure that:

a. Boundaries of the clearing limits associated with site access and construction will be flagged to prevent ground disturbance of riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
b. During excavation, native streambed material will be stockpiled out of the two-year floodplain and for later use in back-filling the trenches used to construct the coffer dams.
c. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area.
d. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration.
e. Temporary access roads will be designed as follows:
    i. Temporary access roads will not cross streams.
    ii. Alteration of existing native vegetation will be minimized in the construction, use, and maintenance of temporary access roads.
    iii. Existing roadways or travel paths will be used whenever reasonable.
    iv. Vehicles and machinery must cross riparian areas at right angles to the main channel wherever reasonable.
    v. Temporary roads within 45 meters of streams will avoid, minimize and mitigate soil disturbance and compaction by clearing vegetation to ground level and placing clean gravel over geotextile fabric.
    vi. No treated wood may be used within or above the ordinary high water mark.
    vii. All cleared areas will be revegetated once construction is completed as described below in term and condition #6.
f. All project operations, except efforts to minimize storm or high flow erosion, will cease under high flow conditions that may result in inundation of the immediate work area.
g. Measures will be taken to prevent any construction debris from falling within the boundaries of the ordinary high water mark, waterway or wetlands. Any material that falls within this area will be removed in a manner that has a minimum impact to the riparian area, streambed and water quality.

5. To implement reasonable and prudent measure # 5 (new impervious surface and stormwater management), above, the FHWA shall ensure that:

a. All stormwater runoff from any road or bridge built pursuant to a permit issued under this Opinion must be managed to ensure that it will not result in a change in the existing hydraulic conditions or an increase of pollutants to the receiving water.
b. Any project that will produce new surfaces or land use conversions that retard the entry of water into the soil must control the quantity and quality of the resulting stormwater runoff for the life of the project.

c. Permeable pavements should be installed and maintained for load-bearing surfaces other than bridge decking wherever soil, slope and traffic conditions allow.
d. Stormwater must be infiltrated or dispersed onsite to the maximum extent possible without causing flooding or erosion impacts.
e. When stormwater runoff must be discharged into a freshwater system, the following requirements apply:
    i. The area must be drained by a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.
    ii. Any erodible elements of this system must be adequately stabilized to prevent erosion.
    iii. Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect.
    iv. Runoff treatment facilities must be designed, built and maintained to collect runoff from the project site using the best available technology applicable to the site conditions. Treatment must be provided to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

6. To implement reasonable and prudent measure #6 (site restoration and enhancement), above, the FHWA shall ensure that:

a. Restoration goal. The goal of habitat improvement through on-site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.
b. All damaged areas will be restored to pre-work conditions. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.
c. All exposed soil surfaces, including construction access roads and associated staging areas, will be stabilized at finished grade with mulch, native herbaceous seeding, and native woody vegetation. Areas requiring revegetation must be replanted between October 15 and April 15 with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.
d. No herbicide application will occur within 90 meters of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.
e. Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.
f. Plantings will achieve 100% survival after one year, and 80% survival or 80% ground cover after five years (including both plantings and natural recruitment).

If the success standard has not been achieved after five years, the applicant will submit an alternative plan to the FHWA. The alternative plan will address temporal loss of function for the five years.

g. Enhancement sites. Long-term adverse effects will be avoided or offset after taking all appropriate steps to avoid or minimize adverse effects.

i. Actions of concern. The following actions require compensation for long-term adverse effects: Construction of new impervious surfaces inside the riparian buffer area[5], riprap retaining wall, and other activities that retard or prevent development of properly functioning condition of natural habitat processes.

ii. Enhancement at the proposed sites will be will be completed before the construction of the bridges is completed.

iii. Design review. The FHWA and NOAA Fisheries shall review and approve the proposed designs to avoid or offset long-term adverse affects considering the following:

(1) Use of an ecosystem approach.
(2) Habitat requirements of the affected species.
(3) Productive capacity of the proposed construction and compensation site(s).
(4) Timing of the construction and compensation actions.
(5) Length of time necessary to achieve full functionality.
(6) Likelihood of success.
(7) Hydraulics at the site to determine the feasibility of the success of the enhancement.

iv. All plantings must occur before April 15 with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

v. No herbicide application will occur within 90 meters of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

vi. No surface application of fertilizer will be used within 15 meters of any stream channel as part of this permitted action.

vii. Fencing will be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

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[5] For purposes of this Opinion only, "riparian buffer area" means land: (1)Within 150 feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100 feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an aboveground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50 feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. "Natural water" means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

viii. Provide the FHWA with a five-year plan to:
(1) Inspect and, if necessary, replace failed plantings;
(2) Control invasive non-native vegetation;
(3) Protect plantings from wildlife damage and other harm.

ix. Provide the FHWA annual progress reports on the success of the enhancement sites.

h. All actions intended for streambank protection will also provide the greatest degree of natural stream and floodplain function achievable through application of an integrated, ecological approach.

j. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption. No end dumping will be allowed for bank stabilization.

k. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site and be replaced with a functional equivalent.

l. Where feasible, the bankline and riprap will be revegetated using natural vegetation (*e.g.*, willow stakes).

7. To implement reasonable and prudent measure #7 (monitoring and reporting), the FHWA shall ensure that:

a. Within 90 days of completing the construction projects and within 90 days of completing the enhancement projects, the FHWA/ODOT will submit a monitoring report to NOAA Fisheries describing the success meeting their permit conditions. This report will consist of the following information:

i. Project identification.
(1) Project name and project location, including any compensatory enhancement site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
(2) Starting and ending dates of work completed for this project;
(3) the FHWA contact person.
(4) Monitoring reports shall be submitted to:
NOAA Fisheries
Oregon Habitat Branch
Attn: 2003/00145
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

ii. Stormwater management plan. A report analyzing the impacts of the stormwater generated by the new impervious surface and how it impacts the hydrology and water quality downstream of the project site.

iii. Isolation of in-water work area. A report of any seine and release activity, including:
(1) The name and address of the supervisory fish biologist.

(2) Methods used to isolate the work area and minimize disturbances to ESA-listed species.
(3) Stream conditions before and following placement and removal of barriers.
(4) The means of fish removal.
(5) The number of fish removed by species.
(6) The location and condition of all fish released.
(7) Any incidence of observed injury or mortality.

iv. Pollution and erosion control. Copies of pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

v. Site restoration. Documentation of the following conditions:
(1) Finished grade slopes and elevations.
(2) Log and rock structure elevations, orientation, and anchoring, if any.
(3) Planting composition and density.
(4) A plan to inspect and, if necessary, replace failed planting and structures for five years.

vi. A narrative assessment of the project's effects on natural stream function.

vii. Photographic documentation of environmental conditions at the project site and compensatory enhancement site(s) (if any) before, during and after project completion.
(1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

viii. Post construction impacts. The FHWA/ODOT shall assess the project's impacts, temporary and permanent, and compare them to the impacts assessed in the biological assessments. This written assessment will be provided to NOAA Fisheries for review. If the actually impacts exceed those outlined in the BA then the FHWA/ODOT will provide additional enhancement to offset those impacts.

ix. Other data. Additional project-specific data, as appropriate for individual projects.
(1) Work cessation. Dates work cessation was required due to high flows.

(2) Fish screen. Compliance with NOAA Fisheries' fish screen criteria.
(3) Site preparation.
  (a) Total cleared area – riparian and upland.
  (b) Total new impervious area.
(4) Streambank protection.
  (a) Completed screening matrices used to select treatments.
  (b) Type and amount of materials used.
  (c) Project size – one bank or two, width and linear feet.
(5) Site restoration.
  (a) Finished grade slopes and elevations.
  (b) Log and rock structure elevations, orientation, and anchoring (if any).
  (c) Planting composition and density.

3. MAGNUSON-STEVENS ACT

3.1 Background

The objective of the essential fish habitat (EFH) consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for Federally-managed fisheries within the waters of Washington, Oregon, and California. Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable, man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999).

Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable, man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed

descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Actions

The proposed actions are detailed in sections 1.2 and 1.2.1. The action areas are defined as the channel and adjacent riparian area from about 400 meters upstream from the project and enhancement sites, and downstream 400 meters below the project and enhancement sites. These areas have been designated as EFH for various life stages of coho and chinook salmon.

3.5 Effects of Proposed Action

As described in detail in section 2.1.3, the proposed activities may result in detrimental short-term adverse effects to a variety of habitat parameters. These impacts include: Increases in turbidity, disturbance of the beds and banks of the river, removal of riparian vegetation and the potential for pollutants to enter the water. NOAA Fisheries believes the implementation of the bridge replacement project is likely to adversely affect EFH for chinook salmon. Information submitted by the FHWA in its request for consultation and additional information provided by ODFW is sufficient for NOAA Fisheries to conclude that the effects of the proposed action are transient, local, and of low intensity and are likely to adversely EFH in the short term, however over the long term provide a larger hydraulic opening under the bridge, riparian growth, and more adequate treatment of stormwater will benefit chinook salmon. NOAA Fisheries also believes that replacement of the bridge will provide a beneficial effect and the conservation measures proposed as an integral part of the action would avoid, minimize, or otherwise offset potential adverse impacts to designated EFH.

3.6 Conclusion

After reviewing the current status of the listed species, the environmental baseline for the action areas, the effects of the proposed bridge replacements, and cumulative effects, NOAA Fisheries has determined that the Upper Perry Bridge Replacement Project, as proposed, will adversely affect the EFH for Pacific salmon.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA in the BA and all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 of this biological opinion are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 90 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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